What is claimed:

1. A pump, comprising:

a first layer; and

a second layer at least partially disposed adjacent to the first layer defining an inlet fluid path, a bubble chamber defined by a membrane, and an outlet fluid path, wherein the inlet fluid path is in fluid communication with the bubble chamber and the outlet fluid path is in fluid communication with the bubble chamber;

an assembly having a variable-volume chamber, a reference chamber, and an acoustic port in operative communication with the variable-volume and reference chambers, wherein the variable-volume chamber includes an opening disposed around the bubble chamber on at least one of the first and a second layers; and

a plunger positioned to engage the bubble chamber.

2. The pump according to claim 1, further comprising a source of pressure and a fluid port coupled to the reference chamber, wherein the source of pressure is in fluid communication with the fluid port to apply at least one of a negative pressure and a positive pressure thereto.

3. The pump according to claim 1, further comprising:

a reference speaker disposed within the reference chamber;

a reference microphone disposed within the reference chamber; and

a variable-volume microphone disposed within the variable-volume chamber.

4. The pump according to claim 3, further comprising a processor in operative communication with the reference speaker, and the reference and variable-volume microphones, wherein the processor is configured to control the speaker to generate a plurality of frequencies and sense the frequencies through the reference and variable-volume microphones, wherein the processor is further configured to estimate a volume of the variable volume using the sensed frequencies from the reference and variable-volume microphones.

5. The pump according to claim 3, wherein the processor is further configured to estimate a flow rate of the pump using the estimated volume of the variable volume.